obtaining a fluctuation in an attenuation factor of the projection optical system, which appears when the mask is moved relative to the exposing energy beam, in accordance with an entered energy entering into the projection optical system; and

obtaining an attenuation factor of the projection optical system on the basis of a value of an entered energy entering into the projection optical system through the mask during the scanning exposure and on the fluctuation in the attenuation factor thereof.

42. (Amended) The exposure method as claimed in claim 41, wherein:

the entered energy entering into the projection optical system through the mask is calculated on the basis of a transmittance of the mask.

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43. (Amended) The exposure method as claimed in claim 41, wherein:

the entered energy entering into the projection optical system through the mask is calculated by using information on a relative position of the exposing energy beam and the mask.

44. (Amended) The exposure method as claimed in claim 43, wherein:

the information on the relative position of the exposing energy beam and the mask is an optical characteristic of the mask in accordance with a position of the mask relative to the exposing energy beam.

46. (Amended) The exposure method as claimed in claim 41, wherein:

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the fluctuation in the attenuation factor of the projection optical system is measured in a state in which the mask is moved relatively to the exposing energy beam.

47. (Amended) The exposure method as claimed in claim 41, further comprising:

controlling an exposure quantity to be provided on the substrate taking into consideration the

a2 fluctuation in the attenuation factor of the projection optical system.

48. (Amended) The exposure method as claimed in claim 41, wherein:

the fluctuation in the attenuation factor of the projection optical system is given by using two types of the fluctuation, one type is the fluctuation of the projection optical system for the entering energy, the other type is the fluctuation of the projection optical system for an elapsed time after irradiation of the projection optical system with the exposing energy beam is suspended.

52. (Amended) An exposure method for irradiating a pattern formed on a mask with an exposing energy beam and projecting an image of the pattern formed on the mask onto a substrate through a projection optical system, comprising:

a3 obtaining a fluctuation in an attenuation factor of the projection optical system in accordance with an entered energy entering into the projection optical system;

correcting the entered energy entering into the projection optical system on the basis of a pattern information on the mask; and

a3

obtaining an attenuation factor of the projection optical system on the basis of a value of the corrected entering energy and on the fluctuation in the attenuation factor of the projection optical system.

55. (Amended) The exposure method as claimed in claim 52, wherein:

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the pattern information is an optical characteristic of the mask in accordance with a position of the mask relative to the exposing energy beam.

Please ADD new claims 74 - 89 to read as follows:

74. (New) The exposure method as claimed in claim 45, wherein:

the characteristic of the transmittance of the mask is obtained in accordance with a position of the mask in the moved direction relative to the exposing energy beam.

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75. (New) The exposure method as claimed in claim 45, wherein:

the characteristic of the transmittance of the mask is obtained as a function of a position of the mask in the moved direction relative to the exposing energy beam on the basis of design data of the mask.

76. (New) The exposure method as claimed in claim 41, wherein:

the fluctuation in the attenuation factor of the projection optical system is obtained prior to the scanning exposure.

77. (New) The exposure method as claimed in claim 76, further comprising:

detecting the exposing energy beam between the light source for emitting the exposing energy beam and the mask,

irradiating the mask with the exposing energy beam in a state in which a light recipient surface of a photo detector is mounted on an imaging plane of the projection optical system, and

a5 obtaining the fluctuation in the attenuation factor of the projection optical system on the basis of a value of the exposing energy beam detected between the light source and the mask and on a value of the exposing energy beam detected by the photo detector in a state in which the mask is moved relatively to the exposing energy beam.

78. (New) The exposure method as claimed in claim 77, further comprising:

controlling the entered energy entering into the projection optical system so as to equate the total energy entering into the projection optical system during the scanning exposure with the total energy entering into the projection optical system when the fluctuation in the attenuation factor of the projection optical system is obtained.

79. (New) The exposure method as claimed in claim 41, wherein:

the entered energy entering into the projection optical system through the mask during the scanning exposure is a value multiplied by the characteristic of the transmittance of the mask.

80. (New) The exposure method as claimed in claim 41, wherein:

the fluctuation in the attenuation factor of the projection optical system is obtained as a function of the entered energy entering into the projection optical system.

81. (New) The exposure method as claimed in claim 80, wherein:

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the entered energy entering into the projection optical system is obtained on the basis of the entered energy detected between the light source for emitting the exposure energy beam and the mask and on the characteristic of the transmittance of the pattern on the mask.

82. (New) The exposure method as claimed in claim 81, wherein:

the characteristic of the transmittance of the pattern on the mask is obtained as a function of a position in the moved direction of the mask relative to the exposing energy beam.

83. (New) The exposure method as claimed in claim 80, further comprising:

moving the mask in a first direction relative to the exposure energy beam and in a second direction relative to the exposure energy beam, which differs from the first direction,

obtaining the function in accordance with each of the relative movement of the mask relative in the first direction and the relative movement of the mask in the second direction.

84. (New) An exposure method for scanning exposure of a pattern formed on mask onto a substrate through a projection optical system by moving the mask and substrate relative to an exposing energy beam, comprising;

obtaining an attenuation factor of the projection optical system in accordance with a variation in a pattern information on the mask in a direction of the relative movement; and

controlling an exposure quantity to be provided on the substrate taking into consideration the attenuation factor of the projection optical system.

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85. (New) The exposure method as claimed in claim 84, wherein:

the pattern information on the mask contains a transmittance of the mask.

86. (New) The exposure method as claimed in claim 84, wherein:

the pattern information on the mask contains a rate of the presence of the pattern on the mask.

87. (New) The exposure method as claimed in claim 85, wherein:

a pattern transmittance of the mask is obtained as a function of a position in a direction of the relative movement.

88. (New) The exposure method as claimed in claim 87, further comprising:

measuring the exposing energy beam by a first measurement system disposed between the light source for emitting the exposing energy beam and the mask;

measuring the exposing energy beam after passing through the projection optical system by a second measurement system; and

obtaining a fluctuation in the attenuation factor of the projection optical system on the basis of the measurement result measured by the first measurement system, on the measurement result measured by the second measurement system and on the function of the pattern transmittance of the mask.

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89. (New) The exposure method as claimed in claim 88, wherein:

the fluctuation in the attenuation factor of the projection optical system is obtained as a function of the exposing energy beam passed through the projection optical system.